

A new subspecies of *Satyrium auretorum* (Lycaenidae) from the Santa Monica mountains of southern California

John F. Emmel

26500 Rim Road
Hemet, CA 92344

and

Rudolf H.T. Mattoni

9620 Heather Road
Beverly Hills, CA 90210

Abstract. A new subspecies of hairstreak butterfly, *Satyrium auretorum fumosum*, is named to designate the differentiated endemic populations of the species that are restricted to the western end of the Santa Monica mountains in California.

Satyrium auretorum (Boisduval) is a widespread, but local, hairstreak species found throughout the foothills and lower mountain slopes of much of California. The nominotypical subspecies was described from a single male (Boisduval 1852), probably taken in the Feather River drainage in the northern Sierra Nevada foothills. For many years the species was considered a great rarity and even Comstock (1927) was unable to illustrate it in color due to the lack of specimens. Since then, however, collectors have taken it in numerous locations across the coast ranges and the Sierra Nevada foothills.

In 1881 Henry Edwards described a southern California subspecies, *spadix* (type locality, Tehachapi pass, California), which he characterized by a lighter ventral surface and more extensively developed fulvous scaling on the dorsal surface of females. This subspecies has subsequently been more frequently collected than the nominotypical one, a function of the greater concentration of collectors near its habitat. From all available information, the species is restricted to scrub oak chaparral and is wholly found within the California floral province.

In 1973 Emmel and Emmel made brief reference to an undescribed subspecies of *S. auretorum*, from the Santa Monica mountains of southern California, which they characterized by a phenotype darker than known from any other population. We now describe this distinct segregate as follows:

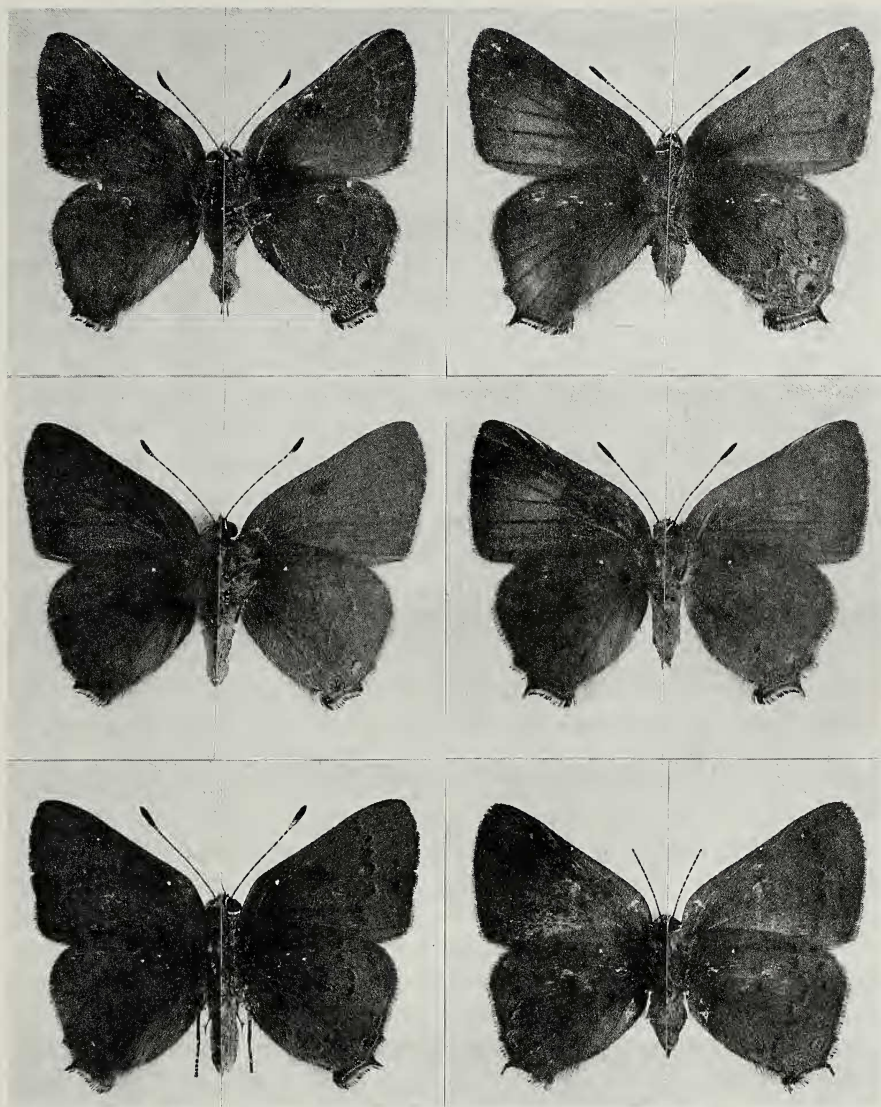


Fig. 1. The subspecies of *Satyrium auretorum*. Left half of each figure dorsal, right half of each figure ventral, surface. Left column males, right column females. Top row, *S. auretorum auretorum*, male, 4 mi. N. Camptonville, Sierra Co. CA. 29 June 1964; female, Capell creek, Napa Co., CA. 3 June 1966. Middle row *S. auretorum spadix*. NE slope San Gabriel Mts., Los Angeles Co., CA. male 6 June 1974; female 8 June 1974. *S. auretorum fumosum*, male, (holotype) Malibu Lake, Los Angeles Co., CA. 6 June 1948; female (allotype) same locality 16 June 1948.

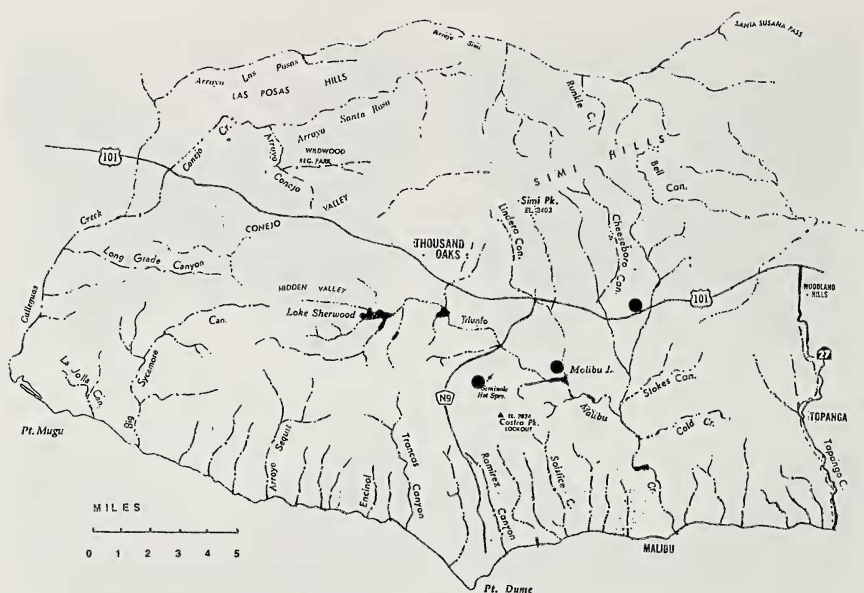


Fig. 2. Distribution map of *Satyrium auretorum fumosum* in the western section of the Santa Monica mountains. The entire known distribution of the subspecies is shown.

Satyrium auretorum fumosum Emmel and Mattoni new subspecies

MALE. Forewing length 12.5–13.5 mm, mean 13.1 mm (N=13).

Dorsal Surface. Forewing: Ground color dark brownish gray. Outer margin with a thin dark brown border, diffused basad into ground color. Fringe pale tannish gray. Androconial scales pale gray, standing out in greater contrast against the ground color than in either *auretorum* or *spadix*. Hindwing: Ground color, outer margin and fringe as in forewing. Anal area pale tannish gray. Tail black with white scaling at tip.

Ventral Surface. Forewing: Ground color dull brown, darker than the fulvous brown seen in nominotypical *auretorum* or *spadix*. Pale gray overscaling present in post discal and submarginal areas, rendering these areas lighter than the basal half of the wing. Dark brown rectangular macule at distal end of discal cell enlarged, approximately two to three times as wide as seen in nominotypical *auretorum* or *spadix*. Postmedian series of dark brown macules crescent-shaped, enlarged over those seen in nominotypical *auretorum* (Usually about twice the width), and edged distally with pale gray scaling. Submarginal series of dark brown macules obsolescent, but more developed than in *spadix*, in which they are usually absent. In nominotypical *auretorum* the submarginal series are usually very well developed. Outer margin edged with a thin brown line, fringe pale tan. Hindwing:

Ground color, macules, outer margin and fringe as forewing, except that postmedian series of macules are ovoid to rhomboid in shape. Pale orange "eyespot" mark in cell CU_1 CU_2 less developed than nominotypical *auretorum*, more prominent than in *spadix*, in which it is often obsolescent.

FEMALE. Size: forewing length 13.5–14.5 mm, mean 13.9 mm (N=6).

Dorsal surface. Forewing: Ground color dark brownish gray with a small area of dull fulvous scaling in the center of the wing. Fulvous scaling markedly reduced in extent from that seen in both other subspecies. In *spadix* the scaling often covers over one third of the wing and has relatively discrete borders, in nominotypical *auretorum* the scaling is usually extensive, but more diffused into the dark brown-gray ground color. Outer margin and fringe as in male. Hindwing: Ground color as forewing. Fulvous scaling absent, or present in small diffuse patch in the posterior half of the submarginal area. In *spadix* and nominotypical *auretorum* the fulvous scaling is usually present and more extensively developed. Ventral surface. Forewing and hindwing: Ground color and marking as in male.

TYPES. Holotype male: California, Los Angeles County, Malibu Lake, 6 June, 1948, leg. Wm. T. Meyer. Allotype female: same data as male except 13 June, 1948. Paratypes (12 males, 5 females): 2 males same data as holotype, 1 male and 1 female same data except 16 June, 1948, 4 males same data except 13 June 1948, 2 males and 1 female same data except 17 June, 1948; 3 males, Malibu, 31 May, 1950, leg. E. R. Hulbirt; 1 female, Seminole Hill (Santa Monica mountains) 15 June, 1941, no leg; 1 female, No. of Hyw. 101, 1–1.5 mi. from Brent's Junction, 27 April 1989, leg. Robert Allen.

DEPOSITION OF TYPES. The type series except for the specimens of Allen and Pasko are in the collection of the Natural History Museum of Los Angeles county. The other paratypes will be placed in the Smithsonian Institution.

ETYMOLOGY. The name *fumosum* is derived from the latin root for smoke, in reference to the darkened, "smoky" appearance of this subspecies in contrast to both *S. a. auretorum* and *S. a. spadix*. The suggested common name for this butterfly is the Santa Monica Mountains hairstreak as all information indicate it is an endemic restricted to that range.

DISTRIBUTION AND PHENOLOGY. *Satryium auretorum fumosum* is thus far known only from the northern slopes and plateau of the western Santa Monica Mountains, where it presumably flies in a single brood from late April to June. The known distribution is illustrated in figure 2. The eastern part of the mountains have been intensively collected since the 1940's, including the detailed records of McFarland, without any evidence of the species. Scanty available information suggests flight usually occurs in June. The April record of the single female taken by Allen may reflect an adaptive response to

the early spring hot spell of 1989. This specimen was taken in a valley oak savannah at least one mile from potential foodplant, scrub oak, *Quercus dumosa*, which is the known foodplant of the subspecies *spadix*. The scrub oak is present in the other known localities of *fumosum* and is its likely foodplant. Scott (1986) cites two other oaks, *Q. lobata* and *Q. wislizenii* as hostplants.

A single female which is intermediate between *fumosum* and *spadix* was taken by John Pasko at Wildwood Park, Thousand Oaks, Ventura county, 5 June, 1980. The status of the population this specimen represents is insufficiently known.

DIAGNOSIS AND DISCUSSION. This subspecies is the darkest of the *S. auretorum* segregates and may represent an adaptive response to a moist coastal climate. It is readily distinguished from both *auretorum* and *spadix* by the dark ground color both dorsally and ventrally and by the more prominent series of ventral postmedian macules. A sample of all three subspecies are illustrated in figure 1, which permits comparison of the ventral shading and maculation character states among these segregates.

A somewhat similar phenotype is known from the Santa Ana mountains of Orange County. Three males specimens were examined, Silverado Canyon, 4 and 9 June, 1981, leg. Bob Iwahashi, collection of LACM. Several additional records from the same locality are given in Orsak (1977). These specimens were not examined. Because intervening habitat, the foothills of the San Gabriel mountains, are occupied by *spadix*; it is unlikely that the Santa Ana populations are monophyletic with *fumosum* even if they prove morphologically similar. Further systematic work is called for to clarify the matter, since this is the only known Santa Monica mountain endemic butterfly. Such research is urgent because of the great rate of land conversion in the area of both segregates and increasing fragmentation across their entire ranges.

The limited distribution of *fumosum* in a rapidly changing urban area indicate the subspecies should be considered for listing as threatened or endangered.

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